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Stormwater Services*



Stormwater 201 – Infrastructure Program

Presented to the Joint City-County Planning Committee
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Stormwater Infrastructure Program Activities

Efforts that address the structural condition and function of an existing drainage system.

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- Drainage Investigations
- Drainage Projects
- NFIP Floodplain Management
National Flood Insurance Program
- Special Projects
- Update Stormwater Inventory



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What is a Drainage System?

Natural and constructed conveyances for collecting and transporting stormwater, whether publicly or privately owned.

- Lakes, Ponds, Rivers, Streams
- Ditches, Catch Basins/Inlets, Outlets, Pipes, Culverts





Drainage System Extent

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| | |
|------------------------|-------------|
| Streams, rivers | 1,250 miles |
| Storm drain pipe | 750 miles |
| Ditches, open channels | 260 miles |
| Stormwater inlets | 39,386 |
| Stormwater outlets | 9,325 |



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Drainage System Responsibilities

- City of Durham
- Durham County
- NCDOT
- Property Owners
 - Residential
 - Commercial
 - Industrial
 - Office and Institutional



Drainage Infrastructure Issues

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- Channel Erosion
- Pipe Failure
- Flooding
- Obstructions
- Grading/Landscaping





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Drainage Investigations

- Assess Conditions
- Suggest Repair Options and Provide Information
- Coordinate Repairs
- Issue NOVs





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Public Education and Outreach

- CENAT
- ComNet
- Keep Durham Beautiful





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Private Property Assistance Requests

- Must receive runoff from a public street
- Addressed by severity
 - P1 - Clear and immediate danger exists
 - P2 - Threat exists but is not immediate
 - P3 - Work would reduce damage to property and financial loss

Private Property Assistance Priorities



Above: Priority 1
Upper Right: Priority 2
Lower Right: Priority 3



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Drainage Projects

- Engineering Analysis
- Design and Plan Preparation
- Permits and Approvals
- Contracting and Contract Management
- Project and Construction Management



Private Property Drainage Assistance Project



Above: Before Construction
Upper Right: After Construction
Lower Right: Site Today

Cost - \$6,739.00



By the Numbers:

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6527

Drainage Investigations Performed

395

Drainage Assistance Projects Completed

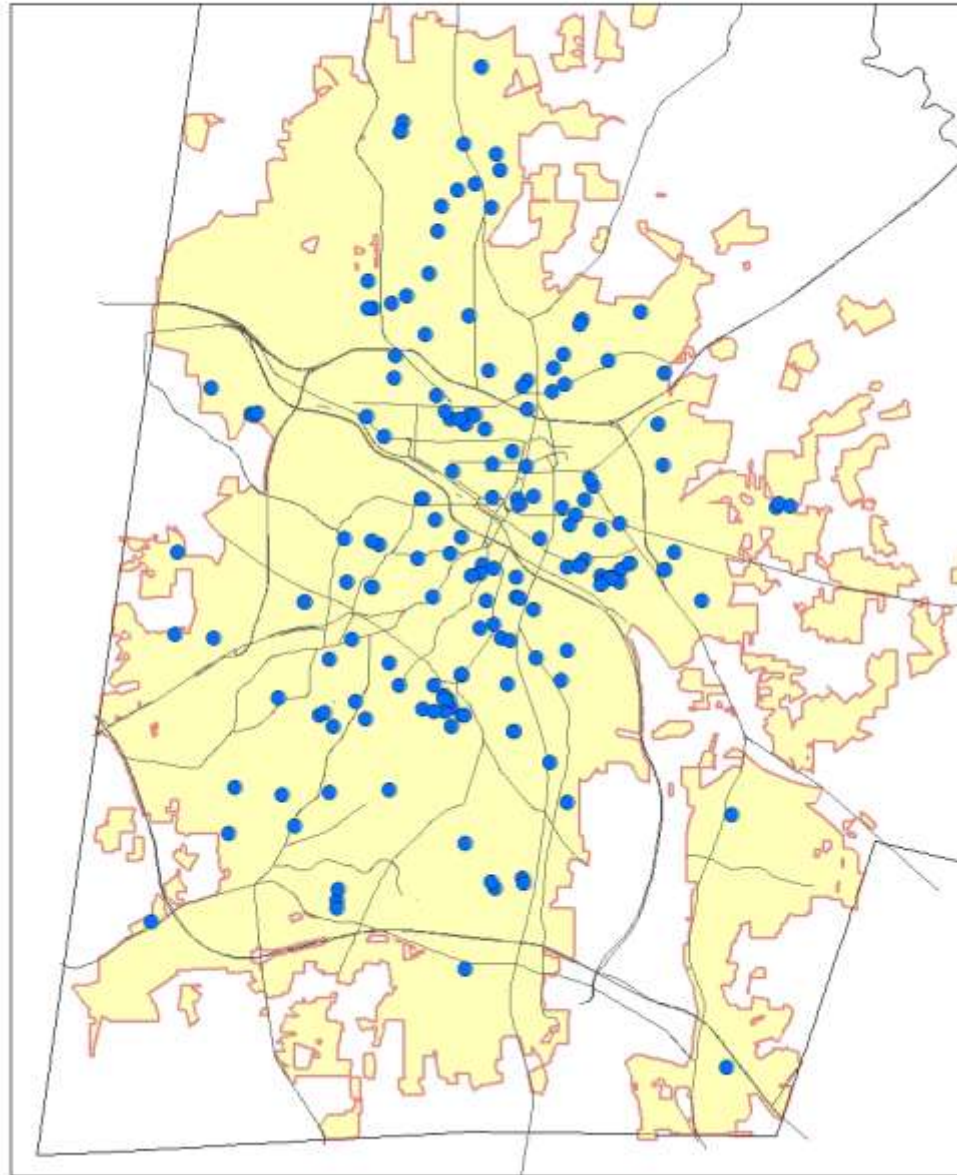
\$4.5M

Cost of Completed Assistance Projects

\$11,500

Average Per Property Cost

Completed Private Property Drainage Assistance Projects





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Other Drainage Projects

➤ Street Maintenance Division

- Drainage Piping
- Channel Rehabilitation
- Culvert Repair/Replacement

➤ Engineering Division

- Drainage Studies

➤ General Services/Parks and Recreation

- Stream Maintenance
- Culvert Replacement

Major Infrastructure Project: Markham Culvert



Above: Upstream View

Upper Right: Downstream View

Lower Right: Inside Barrel

Estimated Cost - \$1.5M





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The National Flood Insurance Program

- A voluntary program between the Federal government and the local community
- Requires adopting, implementing and enforcing floodplain management ordinance
- Benefits to membership:
 - Federally-backed flood insurance
 - State and Federal disaster assistance
 - Federal loans, grants, payments, subsidies, or rebates for acquisition or construction purposes to properties in the floodplain



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Flood Insurance Rate Maps (FIRMs)

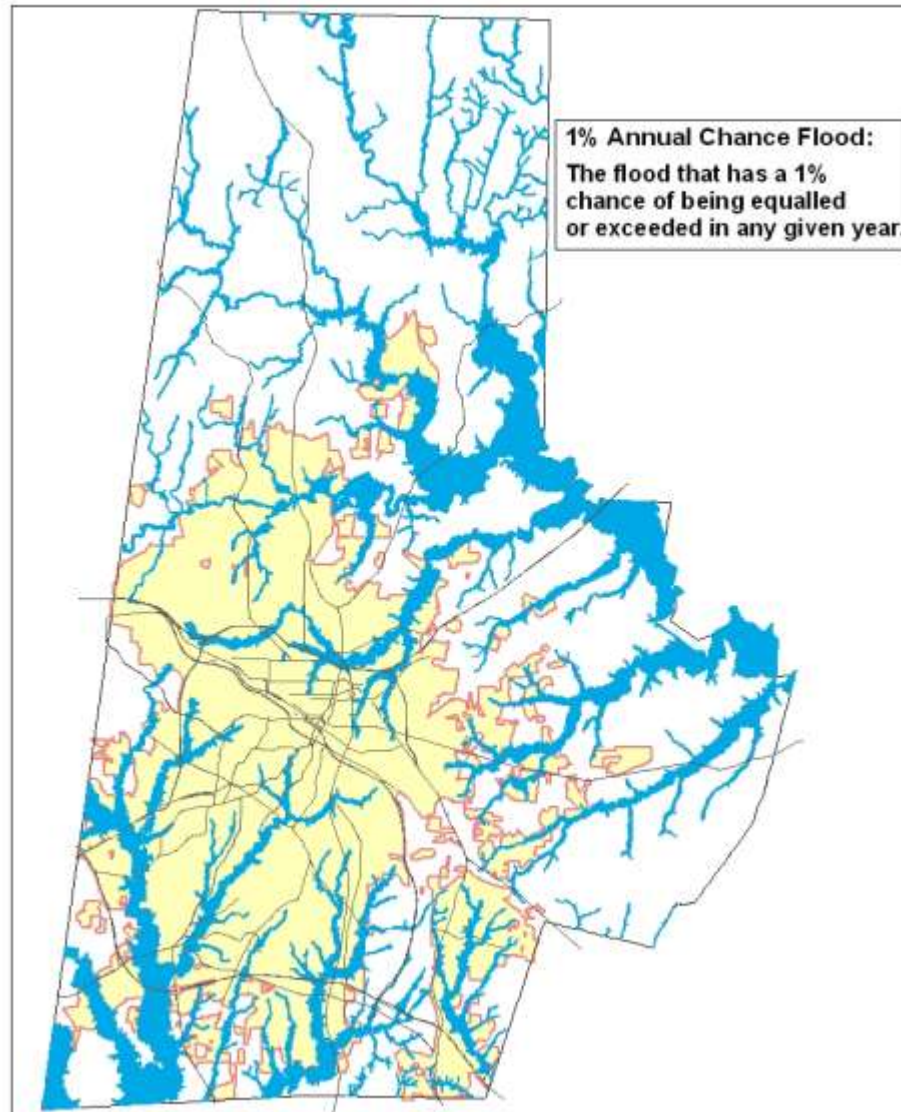
Maps issued by FEMA that show areas of special flood hazard, flood insurance risk zones and other flood-related information.

History of Durham FIRMs:

- | | |
|---------------------|-------------------------|
| – January 3, 1979 | City of Durham |
| – February 15, 1979 | Durham County |
| – July 15, 1981 | City of Durham |
| – February 2, 1996 | Durham County and City* |
| – March 21, 2000 | Durham City and County |
| – May 2, 2006 | Durham City and County* |
| – August 2, 2007 | Durham City and County |

* All FIRM panels re-issued for community.

FEMA Mapped Floodplain





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NFIP Floodplain Management

- Manage the Community Map Repository
- Provide Floodplain Information to Customers
- Review/Coordinate Requests for Map Revisions
- Check Floodplain Development Permit Applications
- Technical Resource for Floodplain Administrator



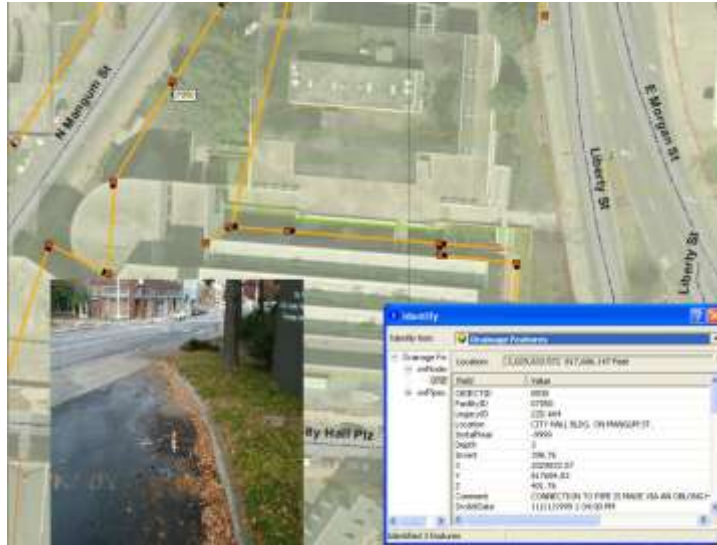


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Special Projects

Stormwater Inventory



Fran Buyout



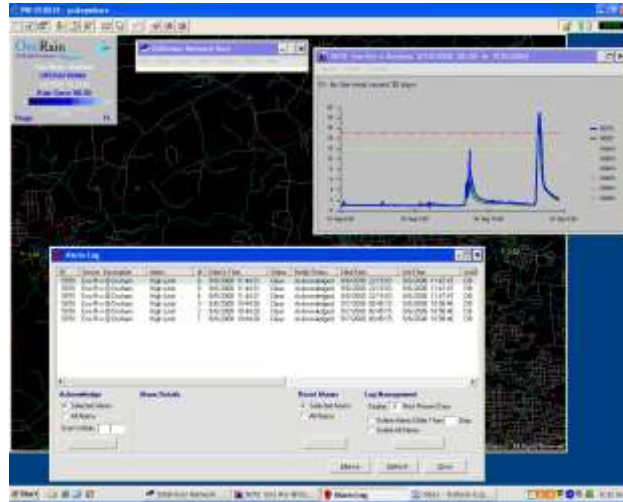


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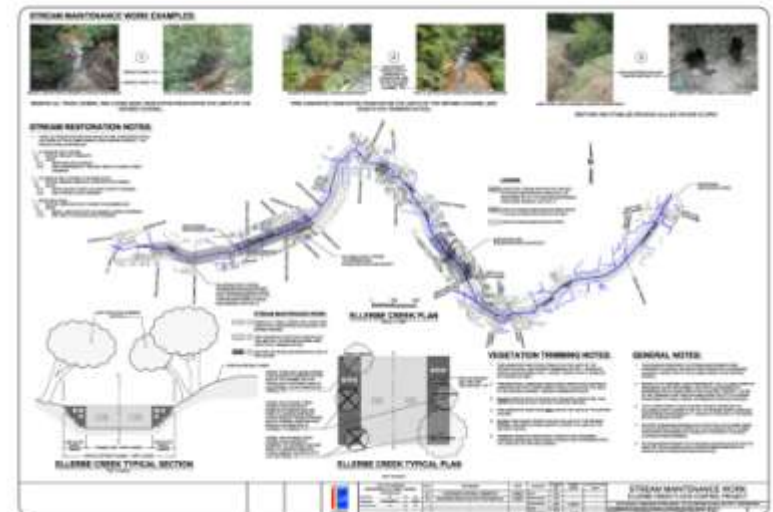


Special Projects (Cont.)

Eno Flood Warning



Ellerbe Creek Flood Control



Bid/Construction Docs Update





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What's Next?

- Public Education and Outreach
- Update Stormwater Utility Ordinance
- GIS Improvements



Looking Toward the Future

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- Floodplain Mitigation Planning
- Proactive ROW Repair and Maintenance
- Planning for expanded Flood Warning System